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AUTHOR	Mrowicki, Linda; And Others
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ABSTRACT

A project was conducted to improve the productivity and efficiency of 10 manufacturers by providing workplace literacy instruction to workers lacking basic skills required for their jobs, and to improve the capability of educational programs to meet the basic skill needs of the manufacturing industry by developing an evaluation manual for basic skills programs. The 2-year project conducted literacy audits at 10 manufacturing companies, assessed 3,291 workers, developed customized assessments and curricula, and provided 104 courses to 948 participants in the Chicago area. The project did not reach as many participants as had been planned, due to small classes resulting from employers' inability to grant sufficient release time for employees. However, more than the anticipated number of courses were conducted. A no-cost 6-month extension allowed the project to serve a higher population of workers, although this number was only 62 percent of the anticipated number. The project was evaluated and a program evaluation manual based on the experiences of the project was produced. The internal and external evaluation reports are included with the project report. Included in the appendices are copies of the Organizational Effectiveness and Employee Development interview forms and reading and mathematics test score data and statistical analyses for six manufacturing companies. (KC)

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ED 373 260

WORKPLACE LITERACY in a TOTAL QUALITY MANAGEMENT ENVIRONMENT for the MANUFACTURING INDUSTRY in CHICAGO and NORTHERN ILLINOIS

V198A202112

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Final Performance Report

Prepared by:

Linda Mrowicki, Director
Tess Locsin
Lynn Olivi
Douglas Jones

with the assistance of
Sally Granick, Administrative Assistant

For more information contact
:Linda Mrowicki, Project Director
Workplace Education Division - THE CENTER - Resources for Education
1855 Mt. Prospect Road
Des Plaines, IL 60018
(708) 803-3535
FAX (708) 803-3231

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App. A: Internal Final Quarterly Report

App. B: Report from the External Evaluator, Dr. Thomas G. Sticht

I. Compare actual accomplishments to the objectives contained in the approved application.

GOAL: The goals of the project were:

1. to improve the productivity and efficiency of ten manufacturers by providing workplace literacy instruction to workers lacking basic skills required for their jobs

2. to improve the capability of educational programs to meet the basic skill needs of the manufacturing industry by developing a "Manual for Evaluating the Impact of Basic Skills Programs".

GOAL I OBJECTIVES:

1. ***To establish Employer/Employee Basic Skills Committees by month 1.***
This goal was achieved within the first month of initiating the project at each site.

2. ***To conduct literacy audits and needs assessments for ten manufacturing companies by month 4.***
This goal was achieved by the fourth month of iniating the project at each site.

3. ***To plan a process for measuring program outcomes and impact and collect baseline data by month 3.***
Baseline data was collected by month 3 at each site.

4. ***To develop/select assessment instruments for participating companies by month 4.***
This goal was achieved by the fourth month of initiating the project at each site.

5. ***To identify competencies and basic skills for ten manufacturers and develop customized curricula by month 15.***
This goal was achieved within the time frame.

6. ***To select and train 15 workplace literacy instructors by month 5 and as needed.***
The project selected and trained 18 workplace literacy instructors prior to start up of courses. The project achieved **115% of the goal.**

7. ***To recruit and pre-post test, and counsel 2600 workers by month 14.***
The project recruited and pre-tested 2987 workers by the Fourth Quarter (12th month.) With the no-cost extension, the project recruited and pre-tested a total of 3291 workers which was **127% of the goal.**

8. ***To schedule 96 modules and provide instruction to 1525 participants by month 16.***
The project scheduled 72 modules by the 18th month of the project. Due to a late start-up at some sites and unanticipated down time at some sites, the project requested a six month no-cost extension. By the end of the project, 104 courses were provided which was **104% of the goal.**

By the15th month of the project, only 37% of the target number of participants had received instruction. Because of this, the Project Director requested a six month no-cost extension. At the end of the no-cost extension, 948 clients had received instruction. This was only 62% of the goal. The reason for not meeting the goal of the number of participants was a higher estimate of the class size in the proposal than the actual enrolled.

9. ***To measure the learning of 1525 participating workers by month 16.***
By the end of the project, 948 participating workers had been evaluated.

10. ***To conduct formative and summative project evaluation using an external evaluator by month 18.***
This goal was achieved by month 24 (at the conclusion of a 6 month no-cost extension).

GOAL II OBJECTIVE:

11. ***To produce and disseminate the Manual for Measuring the Impact of Basic Skills Programs in the Manufacturing Industry by month 18.***

Because the Manual was the culmination of all project activities, the development coincided with the conclusion of the approved 90 day close-out.

The project disseminated the manual to ERIC Clearinghouse on Adult, Career & Vocational Education, Division of Adult Education & Literacy Clearinghouse on Adult Education and Literacy, and the Curriculum Coordination Center Network.

II. Refer to the schedule of accomplishments and their target dates contained in the approved application and give reasons for slippage in those cases where established objectives were not met. Include any corrective measures taken to correct slippage.

The schedule of accomplishments and completion dates are summarized in the previous section. With the no-cost extension, all objectives were met with the exception of the target number of participants. The schedule of accomplishments and completion dates are summarized in the previous section.

The reason for not meeting the objective of teaching 1525 participants is that project over-estimated the class size in the application. We originally estimated an average class size of 15. In reality the class size was much smaller primarily due to scheduling constraints which limited the number of workers that could be released from the shop floor for classes at one time. Average class sizes for the companies were: Amurol - 15; Burgess-Nerton - 11; Commander Packaging - 11; John Crane - 9; ITT McDonnell & Miller - 10; Land O' Frost - 7; Phoenix Closures - 6; Tricon Industries - 7; and Videojet - 11.

It is important to note that while the project did not attain its objective regarding the number of participants, the project actually **exceeded** its goal of the number of courses to be provided.

III. For projects involving direct services to individuals, identiify the number and characteristics of project participants who completed planned project activities and of those who did not, and the outcomes achieved by participants who completed project activities.

1. Mean Age Participants: 41

2. Sex: No. Males 266 No. Females 330 (Non duplicative data)

3. Race/Ethinicity: No. who are: (Non duplicative data)
   White 166
   Black 50
   Hispanic 295
   Am. Indian/Alaska Native 0
   Asian Pacific Islander 85

4. No Limited English Proficient: 380 (Non duplicative data)

5.

Outcomes (Cumulative data)	No. Participants
a. Tested higher on basic skills	550
b. Improved communication skills	271
c. Increaded productivity	821
d. Improved attendance at work	821
e. Increased self-esteem	821

6.

Years with the company (Non duplicative data)	No. Participants
Unemployed	0
0-5	323
6-10	116
11-15	97
16-over	90

Note: upon occasion, participants declined to provide information, therefore, the totals may differ.

IV. Report on any dissemination activities.

Dissemination activities consisted of making presentations, publishing information about the project, and disseminating publications and curriculum.

Presentations

The following presentations were made to disseminate information about the project as well to advance the field of workplace literacy:

May 1994: Linda Mrowicki, Director, and Douglas Jones, Consultant, participated in a panel at a state-wide Workplace Literacy Conference. The title of the presentation was "If They Work Together, Shouldn't They Learn Together? Cooperative Learning Models for Workplace Literacy Programs."

May 1994: Consultants/Trainers Douglas Jones, Tess Locsin, Lynn Olivi, Colette Poindexter, Laima Schnell, and Vickie Woodruff presented a two-part presentation on Effective Basic skills programs.

Mar. 1994: Linda Mrowicki presented an overview of basic skills programs to staff at El Camino Community College in California.

Feb. 1994: Linda Mrowicki chaired a panel at a statewide workplace education conference. The topic was on the integration of basic skills programs into the company strategies.

1993: Linda Mrowicki, co-presented three two day Train - the -Trainer workshops on How to Conduct Literacy Job Task Analysis and Develop Curriculum in Florida.

Oct. 1993: Linda Mrowicki served on a panel of workplace literacy providers at theMO Literacy Investment for Tomorrow's state conference.

Dec. 1993: Linda Mrowicki, Douglas Jones and Colette Poindexter presented on the components of Basics Skills Programs to the Chicago Chapter of the American Society of Training and Development.

Dec. 1993: Linda Mrowicki co-facilitated a curriculum working group for the Colorado State Community College System workplace ltieracy project.

Nov. 1993: Douglas Jones was featured on "This Week With 32", a local TV station that addressed the need for basic skills programs in the workplace.

Summer 1993: Colette Poindexter was featured on CBS News "Eye On America" that examined successful basic skills programs.

March 1993: Linda Mrowicki participated on a panel of basic skills experts to discuss professionalizing the field at the International TESOL Conference in Atlanta, Ga.

Oct. 1992: Linda Mrowicki was an invited speaker at the Workforce Education Business Roundtable on workplace tests and the assessment process.

Sept. 1992: Linda Mrowicki chaired an employers' panel at the U.S. Department of Education Project Director's meeting. The topic was "Curriculum Development".

May 1992: Linda Mrowicki, Douglas Jones, Monica Lynch, and Tess Locsin, presented a three hour session of "Effective Workplace Literacy Programs" at a statewide literacy conference.

Linkages:

Douglas Jones, serves on the Train America's Workforce Committee of the Chicago Chapter of the American Society for Training and Development. This committee membership facilitates the inclusion of basics skills issues in the organization's annual training plan.

Douglas Jones and Laima Schnell are members of the Illinois Workplace provider group which meets bi-monthly to discuss common issues and concerns in workplace education.

Fall 1993: The project was selected as a model demonstration site for the identification of best practices in workplace basic skills programs by the University of Illinois - National Center for Research in Vocational Education. The program results and best practices will be disseminated through the U of I - NCRVE work.

Publications

The project was referred to in a CCASTD article about basic skills programs in May-June 1994 and in the Jan. - Feb. issue of ACTION - A Bimonthly Update from the Chicagoland Chamber of Commerce.

In addition, the project disseminated brochures and information about its services upon request by both phone and by mail.

The project also distributed 214 copies of its workplace publications to people in the field.

V. Report on any evaluation activities.

The project maintained data on a quarterly basis. This data was used to internally monitor progress on achieving its goals. A copy of the final quarterly report is found in Appendix A.

The external evaluator's report can be found in Appendix B.

VI. Report on any changes in key personnel.

There were no changes in key personnel.

Workplace Education Division of
THE CENTER - Resources for Education

WORKPLACE LITERACY PARTNERS for the MANUFACTURING INDUSTRY in CHICAGO and NORTHERN ILLINOIS

V198A20112

8th Quarterly Report April - May 1994

Prepared by:

Lynn Olivi, Consultant/Trainer
Linda Mrowicki, Project Director

with the assistance of
Sally Granick, Administrative Assistant

For more information contact:
Linda Mrowicki, Project Director
Workplace Education Division of THE CENTER - Resources for Education
1855 Mt. Prospect Road
Des Plaines, IL 60018
708 / 803-3535
FAX 708 - 803-3231

NATIONAL WORKPLACE LITERACY PROGRAM
INFORMATION FORM

Part 1: Program Parameters

1. Target No. to be Served: 1525

2. No. Served at Each Site to Date: (Class Slots)

Site 1.	118	Site 6.	52
Site 2.	177	Site 7.	13
Site 3.	11	Site 8.	57
Site 4.	115	Site 9.	166
Site 5.	130	Site 10.	69

3. Total No. Served: 948

4. Fed. Funds Obligated: $455,607.00

* 5. Matching Funds/ In-Kind: $120,838.97

** 6. Value Release Time: 236,095.37

7. No. Participating in Programs Offered:

Basic Skills	591
GED	43
ESL	314

8. Contact Hours Provided: 21,289

(Contact Hours are the number of teaching hours that workers receive)

This data represents unduplicated participants.

Part 2: Participation Data

1. Mean Age Participants: 41

2. Sex: No. Males 266 No. Females 330

3. Race/ Ethnicity: No. who are:

White	166	Am. Indian/ Alaska Native	0
Black	50		
Hispanic	295	Asian/Pacific Islander	85

4. No. Single (Head) of Household: N/A

5. No. Limited English Proficient: 380

6. Outcomes

	No. Participants
a. Tested higher on basic skills	550
b. Improved communication skills	271
c. Increased productivity	821
d. Improved attendance at work	821
e. Increased self-esteem	821

7. Years with the company

	No. Participants
Unemployed	---
0-5	323
6-10	116
11-15	67
16-over	90

Includes employers' contributions of management time, office space, duplication, materials, classroom space and refreshments for participants

** Release time includes employees time spe in class, literacy meetings, assessments, and counseling.

*** Upon occassion participants declined to provide information requested in Part 2 # 1-7; therefore the the totals may not be equivalent.

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WORKPLACE LITERACY PARTNERS FOR MANUFACTURING INDUSTRY IN NORTHERN ILLINOIS

EMPLOYER MATCH

Quarter April - May 1994

Companies	Management/ Supervisor Time ($)	Workers Release Time (hours)	Value of Workers Release Time
Amurol Products Co.	-	-	-
Burgese-Norton Mfg.	$30.00	456	$5,818.05
Commander Packaging	-	-	-
John Crane	$30.00	249	$3,603.03
ITT M & M	-	552	$10,002.72
Land O'Frost	-	-	-
Parco Foods, Inc.	-	-	-
Phoenix Closures	-	-	-
Tricon	$30.00	195	$4,544.00
Videojet	-	-	-
TOTALS	$90.00	1,452	$23,967.80

	Management	Supervisor	Worker
Amurol Products Co.	$30.00	$25.00	$11.55
Burgess-Norton Mfg.	$30.00	$25.00	$12.60
Commander Packaging	$30.00	$25.00	$13.00
John Crane	$30.00	$25.00	$14.47
ITT M & M	$30.00	$25.00	$16.03
Land O'Frost	$30.00	$25.00	$11.00
Parco Foods, Inc.	$30.00	$25.00	$11.20
Phoenix Closures	$30.00	$25.00	$11.00
Tricon	$30.00	$25.00	$16.00
Videojet	$30.00	$25.00	$11.69

Chart A: Number of Students

Total # of students enrolled in classes:	948
Goal:	1525
Cumulative % of goal:	62%

Qrtr-New Fed

Workplace Literacy Partners for the Manufacturing Industry in Northern Illinois

CHART B: NUMBER OF PRE-ASSESSMENTS BY QUARTER

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8
Amurol Products	-	23	58	26	-	-	-	-
Burgess-Nor'on	419	333	-	-	140	-	-	23
Commander Packaging	-	-	-	-	11	-	-	-
John Crane	425	-	14	-	17	-	-	-
ITT McDonnell & Miller	-	263	-	3	-	-	-	72
Land O'Frost	-	-	-	15	-	-	-	-
Parco Foods	190	-	-	-	-	-	-	-
Phoenix Closures	88	60	-	-	-	-	-	-
Tricon	-	-	573	402	-	-	-	41
Videojet	95	-	-	-	-	-	-	-
TOTAL	1217	1896	2541	2987	3155	3155	3155	3291
Cumulative % of Goal	47%	73%	98%	115%	121%	121%	121%	127%

Goal: 2600

Qrtr-New.Fed P3

Workplace Literacy Partners for the Manufacturing Industry in Northern Illinois

CHART C: NEW COURSES OPENED BY QUARTER

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8
Amurol Products	-	4	2	2	-	-	-	-
Burgess-Norton	-	1	-	-	2	8	3	2
Commander Packaging	-	-	-	-	1	-	-	-
John Crane	2	-	2	3	-	5	3	3
ITT McDonnell & Miller	-	3	3	2	1	-	2	2
Land O'Frost	-	-	-	2	2	1	3	-
Parco Foods	-	1	1	-	-	-	-	-
Phoenix Closures	-	6	3	-	-	-	-	-
Tricon	-	-	1	3	3	1	1	13
Videojet	-	3	2	-	2	-	-	-
TOTAL	2	20	34	46	57	72	84	104
Cumulative % of Goal	2%	21%	35%	48%	59%	75%	88%	108%

Goal: 96

CHART D: CLASSES BY DATE

DATES	SITE	COURSE	INSTRUCTOR	TOTAL # STS.	SUCCESSES	FAILURES	DROPS	% of SUCCESS
7/20-9/16/92	John Crane	Math	Schnell	12	10	0	2	100%
7/20-9/19/92	John Crane	Math	Schnell	10	9	0	1	100%
10/12-12/30/92	Phoenix	Math	Diamond	3	2	0	1	100%
10/12-12/30/92	Phoenix	Math	Toliver	13	5	0	8	100%
10/12-12/30/92	Phoenix	Math	Toliver	13	5	1	7	83%
10/12-12/30/92	Phoenix	Math	Diamond	6	4	0	2	100%
10/13-11/19/92	Phoenix	Math	Scott	2	2	0	0	100%
10/13-11/19/92	Phoenix	Math	Scott	5	5	0	0	100%
10/26-12/18/92	Videojet	Reading/Writing II	Lynch	12	11	1	0	92%
10/27-12/19/92	Videojet	Reading/Writing II	Oswald	11	11	0	0	100%
11/9/92-1/14/93	Burgess-Norton	Math	Scott	12	11	0	1	100%
11/16-12/23/92	Parco	ESL	Digerlando	10	8	2	0	80%
11/16/92-2/24/93	Amurol	ESL	Brenner	20	16	0	4	100%
11/16/92-3/4/93	Amurol	ESL	Brenner	18	17	0	1	100%
11/17/92-2/23/93	Amurol	ESL	Brenner	19	17	0	2	100%
11/17/92-3/5/93	Amurol	ESL	Brenner	18	16	0	2	100%
11/30/92-2/10/93	I.T.T. M&M	ESL II	Locsin	8	7	0	1	100%
12/1/92-1/28/93	Videojet	Reading/Writing III	Jones	11	10	0	1	100%
12/1/92-2/11/93	I.T.T. M&M	R/W for NNS	Ainis	11	6	0	5	100%
12/1/92-2/11/93	I.T.T. M&M	Reading/Writing II	Ainis	16	10	0	6	100%
1/11-3/30/93	Videojet	Reading/Writing III	Lynch	8	7	0	1	100%
1/12-3/11/93	Videojet	Reading/Writing III	Oswald	9	8	0	1	100%
2/8-2/17/93	Parco	ESL	Olivi	3	3	0	0	100%
2/9-4/27/93	John Crane	R/W for NNS	Locsin	9	8	1	0	89%
2/16-4/29/93	John Crane	ESL	Locsin	5	4	1	0	80%
2/22-5/22/93	Phoenix	Reading/Writing I	Gump	5	3	0	2	100%
2/23-5/23/93	Phoenix	Reading/Writing II	Gump	4	4	0	0	100%
2/23-5/23/93	Phoenix	Reading/Writing II	Gump	6	6	0	0	100%
3/1-4/27/93	I.T.T. M&M	ESL I	Mansoori	12	9	0	3	100%
3/2-4/28/93	I.T.T. M&M	R/W for NNS	Martin	13	11	0	2	100%
3/2-4/28/93	I.T.T. M&M	Reading/Writing III	Martin	7	6	0	1	100%
3/2-5/8/93	Tricon	GED/Module I	Olivi	11	10	0	1	100%
3/29-5/26/93	Amurol	ESL	Brenner	14	11	0	3	100%
3/30-5/20/93	Amurol	ESL	Brenner	16	11	0	5	100%
5/15-6/23/93	Tricon	GED Module II	Olivi	9	8	0	1	100%
5/22-7/22/93	Tricon	Reading/Writing	Olivi	10	6	2	2	75%

CHART D: CLASSES BY DATE

5/24-7/28/93	Tricon	Reading/Writing	Olivi	7	5	1	1	83%
5/25-8/12/93	I.T.T. M&M	Reading/Writing I	Jones	8	8	0	0	100%
5/26-8/18/93	I.T.T. M&M	Reading/Writing NNS	Ainis	7	4	0	3	100%
6/3-8/24/93	John Crane	ESL	Locsin	14	12	1	1	92%
6/3-8/24/93	John Crane	Reading/Writing NNS	Locsin	13	9	3	1	75%
6/7-8/4/93	Amurol	Math	Syvertson	4	4	0	0	100%
6/8-8/5/93	Amurol	ESL III	Brenner	9	8	0	1	100%
6/15-7/29/93	John Crane	Customer Interaction	Mrowicki	10	9	0	1	100%
6/29-8/26/93	Land O'Frost	ESL I	Haggerty	9	9	0	0	100%
6/30-8/31/93	Land O'Frost	ESL II	Haggerty	7	6	0	1	100%
7/6-9/7/93	Burgess-Norton	Math	Gump	14	14	0	0	100%
7/6-9/7/93	Burgess-Norton	ESL	Gump	10	10	0	0	100%
7/27-9/23/93	Tricon	Reading/Writing	Olivi	6	5	0	1	100%
8/2-10/4/93	Tricon	Math	Olivi	5	2	2	1	50%
8/9-10/11/93	Packaging	ESL	Olivi	11	5	4	2	56%
8/30-11/16/93	Land O'Frost	ESL I	Van Weelden	7	7	0	0	100%
8/31-11/16/93	Land O'Frost	ESL II	Van Weelden	9	9	0	0	100%
9/20-11/17/93	I.T.T. M&M	Reading/Writing	Ainis	7	6	1	0	86%
9/21-11/18/93	Videojet	ESL	Putnam	7	7	0	0	100%
9/21-11/18/93	Videojet	Reading/Writing I	Oswald	11	11	0	0	100%
9/28-11/16/93	Tricon	Math	Olivi	7	7	0	0	100%
10/5-11/18/93	Burgess-Norton	Math	Gump	14	13	0	1	100%
10/5-11/18/93	Burgess-Norton	ESL	Gump	10	9	0	1	100%
10/12-11/18/93	John Crane	Reading/Writing NNS	Locsin	10	3	5	2	38%
10/12-11/18/93	John Crane	ESL	Fogel	6	4	0	2	100%
10/19-11/11/93	John Crane	Customer Interaction	Mrowicki	11	11	0	0	100%
11/16-11/18/93	Burgess-Norton	Math I	Gump	12	12	0	0	100%
11/16-11/18/93	Burgess-Norton	Math II	Gump	12	12	0	0	100%
11/16-11/30/93	Tricon	Math	Olivi	7	7	0	0	100%
11/18-11/22/93	Land O'Frost	ESL I	Van Weelden	7	7	0	0	100%
11/23-12/16/93	Burgess-Norton	Math	Gump	13	13	0	0	100%
11/23-12/16/93	Burgess-Norton	ESL	Gump	9	9	0	0	100%
11/23-12/16/93	John Crane	Reading/Writing NNS	Locsin	3	3	0	0	100%
11/23-12/16/93	John Crane	ESL	Fogel	4	4	0	0	100%
11/23/93-2/10/94	Burgess Norton	Math I	Gump	12	12	0	0	100%
11/23/93-2/10/94	Burgess-Norton	Math II	Gump	12	11	0	1	100%
1/4-3/29/94	Land O'Frost	ESL I	Van Weelden	4	3	0	1	100%

CHART D: CLASSES BY DATE

1/6-3/24/94	Land O'Frost	ESL II	Van Weelden	5	5	0	0	100%
1/10-4/6/94	Land O'Frost	ESL III	Auerbach	4	3	0	1	100%
1/10-3/16/94	John Crane	ESL	Ainis	10	10	0	0	100%
1/10-3/30/94	John Crane	ESL	Locsin	10	8	0	2	100%
1/11-3/15/94	Burgess-Norton	ESL	Gump	7	6	0	1	100%
1/14-3/25/94	Tricon	GED Module III	Olivi	3	2	0	1	100%
1/24-2/23/94	I.T.T. M&M	Reading/Writing GED I	Ainis	10	8	0	2	100%
2/17-4/21/94	Burgess-Norton	Math I	Gump	12	12	0	0	100%
2/17-4/21/94	Burgess-Norton	Math II	Gump	12	11	0	1	100%
2/23-3/30/94	John Crane	Reading/Writing NNS	Ainis	10	10	0	0	100%
2/28-3/23/94	I.T.T. M&M	GED II	Ainis	8	8	0	0	100%
4/13-5/20/94	Tricon	GED Module IV	Olivi	2	2	0	0	100%
4/11-5/31/94	I.T.T. M&M	Reading/Writing I	Ainis	13	13	0	0	100%
4/18-5/25/94	John Crane	ESL 2	Ainis	9	9	0	0	100%
4/18-5/31/94	I.T.T. M &M	Reading/Writing I	Boran	10	10	0	1	100%
4/19-5/26/94	John Crane	Reading/Writing I	Ainis	6	6	0	0	100%
4/19-5/26/94	John Crane	ESL I	Ainis	3	2	0	1	100%
5/3-5/31/94	Burgess-Norton	Reading/Writing	Olivi	8	8	0	0	100%
5/3-5/31/94	Burgess-Norton	Math	Olivi	8	8	0	0	100%
5/9-5/9/94	Tricon	Math	Olivi	8	8	0	0	100%
5/9-5/9/94	Tricon	Math	Olivi	9	9	0	0	100%
5/11-5/11/94	Tricon	Math	Olivi	6	6	0	0	100%
5/11-5/11/94	Tricon	Math	Olivi	10	10	0	0	100%
5/16-5/16/94	Tricon	Math	Olivi	7	7	0	0	100%
5/16-5/16/94	Tricon	Math	Olivi	10	10	0	0	100%
5/18-5/18/94	Tricon	Math	Olivi	7	7	0	0	100%
5/18-5/18/94	Tricon	Math	Olivi	10	10	0	0	100%
5/23-5/23/94	Tricon	Math	Olivi	6	6	0	0	100%
5/23-5/23/94	Tricon	Math	Olivi	10	10	0	0	100%
5/25-5/25/94	Tricon	Math	Olivi	6	4	2	0	67%
5/25-5/25/94	Tricon	Math	Olivi	10	6	4	0	60%

CHART E: CLASSES BY COMPANY

DATES	SITE	COURSE	INSTRUCTOR	TOTAL # STS.	SUCCESSES	FAILURES	DROPS	% of SUCCESS
11/16/92-2/24/93	Amurol	ESL	Brenner	20	16	0	4	100%
11/16/92-3/4/93	Amurol	ESL	Brenner	18	17	0	1	100%
11/17/92-2/23/93	Amurol	ESL	Brenner	19	17	0	2	100%
11/17/92-3/5/93	Amurol	ESL	Brenner	18	16	0	2	100%
3/29-5/26/93	Amurol	ESL	Brenner	14	11	0	3	100%
3/30-5/20/93	Amurol	ESL	Brenner	16	11	0	5	100%
6/7-8/4/93	Amurol	Math	Syvertson	4	4	0	0	100%
6/8-8/5/93	Amurol	ESL III	Brenner	9	8	0	1	100%
11/23/93-2/10/94	Burgess Norton	Math I	Gump	12	12	0	0	100%
11/9/92-1/14/93	Burgess-Norton	Math	Scott	12	11	0	1	100%
7/6-9/7/93	Burgess-Norton	Math	Gump	14	14	0	0	100%
7/6-9/7/93	Burgess-Norton	ESL	Gump	10	10	0	0	100%
10/5-11/18/93	Burgess-Norton	Math	Gump	14	13	0	1	100%
10/5-11/18/93	Burgess-Norton	ESL	Gump	10	9	0	1	100%
11/16-11/18/93	Burgess-Norton	Math I	Gump	12	12	0	0	100%
11/16-11/18/93	Burgess-Norton	Math II	Gump	12	12	0	0	100%
11/23-12/16/93	Burgess-Norton	Math	Gump	13	13	0	0	100%
11/23-12/16/93	Burgess-Norton	ESL	Gump	9	9	0	0	100%
11/23/93-2/10/94	Burgess-Norton	Math II	Gump	12	11	0	1	100%
1/11-3/15/94	Burgess-Norton	ESL	Gump	7	6	0	1	100%
2/17-4/21/94	Burgess-Norton	Math I	Gump	12	12	0	0	100%
2/17-4/21/94	Burgess-Norton	Math II	Gump	12	11	0	1	100%
5/3-5/31/94	Burgess-Norton	Reading/Writing	Olivi	8	8	0	0	100%
5/3-5/31/94	Burgess-Norton	Math	Olivi	8	8	0	0	100%
4/18-5/31/94	I.T.T. M &M	Reading/Writing I	Boran	10	10	0	1	100%
11/30/92-2/10/93	I.T.T. M&M	ESL II	Locsin	8	7	0	1	100%
12/1/92-2/11/93	I.T.T. M&M	R/W for NNS	Ainis	11	6	0	5	100%
12/1/92-2/11/93	I.T.T. M&M	Reading/Writing II	Ainis	16	10	0	6	100%
3/1-4/27/93	I.T.T. M&M	ESL I	Mansoori	12	9	0	3	100%
3/2-4/28/93	I.T.T. M&M	R/W for NNS	Martin	13	11	0	2	100%
3/2-4/28/93	I.T.T. M&M	Reading/Writing III	Martin	7	6	0	1	100%
5/25-8/12/93	I.T.T. M&M	Reading/Writing I	Jones	8	8	0	0	100%
5/26-8/18/93	I.T.T. M&M	Reading/Writing NNS	Ainis	7	4	0	3	100%
9/20-11/17/93	I.T.T. M&M	Reading/Writing	Ainis	7	6	1	0	86%
1/24-2/23/94	I.T.T. M&M	Reading/Writing GED I	Ainis	10	8	0	2	100%
2/28-3/23/94	I.T.T. M&M	GED II	Ainis	8	8	0	0	100%

CHART E: CLASSES BY COMPANY

4/11-5/31/94	I.T.T. M&M	Reading/Writing I	Ainis	13	13	0	0	100%
7/20-9/16/92	John Crane	Math	Schnell	12	10	0	2	100%
7/20-9/19/92	John Crane	Math	Schnell	10	9	0	1	100%
2/9-4/27/93	John Crane	R/W for NNS	Locsin	9	8	1	0	89%
2/16-4/29/93	John Crane	ESL	Locsin	5	4	1	0	80%
6/3-8/24/93	John Crane	ESL	Locsin	14	12	1	1	92%
6/3-8/24/93	John Crane	Reading/Writing NNS	Locsin	13	9	3	1	75%
6/15-7/29/93	John Crane	Customer Interaction	Mrowicki	10	9	0	1	100%
10/12-11/18/93	John Crane	Reading/Writing NNS	Locsin	10	3	5	2	38%
10/12-11/18/93	John Crane	ESL	Fogel	6	4	0	2	100%
10/19-11/11/93	John Crane	Customer Interaction	Mrowicki	11	11	0	0	100%
11/23-12/16/93	John Crane	Reading/Writing NNS	Locsin	3	3	0	0	100%
11/23-12/16/93	John Crane	ESL	Fogel	4	4	0	0	100%
1/10-3/16/94	John Crane	ESL	Ainis	10	10	0	0	100%
1/10-3/30/94	John Crane	ESL	Locsin	10	8	0	2	100%
2/23-3/30/94	John Crane	Reading/Writing NNS	Ainis	10	10	0	0	100%
4/18-5/25/94	John Crane	ESL 2	Ainis	9	9	0	0	100%
4/19-5/26/94	John Crane	Reading/Writing I	Ainis	8	8	0	0	100%
4/19-5/26/94	John Crane	ESL I	Ainis	3	2	0	1	100%
6/29-8/26/93	Land O'Frost	ESL I	Haggerty	9	9	0	0	100%
6/30-8/31/93	Land O'Frost	ESL II	Haggerty	7	6	0	1	100%
8/30-11/16/93	Land O'Frost	ESL I	Van Weelden	7	7	0	0	100%
8/31-11/16/93	Land O'Frost	ESL II	Van Weelden	9	9	0	0	100%
11/18-11/22/93	Land O'Frost	ESL I	Van Weelden	7	7	0	0	100%
1/4-3/29/94	Land O'Frost	ESL I	Van Weelden	4	3	0	1	100%
1/6-3/24/94	Land O'Frost	ESL II	Van Weelden	5	5	0	0	100%
1/10-4/6/94	Land O'Frost	ESL III	Auerbach	4	3	0	1	100%
8/9-10/11/93	Packaging	ESL	Olivi	11	5	4	2	56%
11/16-12/23/92	Parco	ESL	Digerlando	10	8	2	0	80%
2/8-2/17/93	Parco	ESL	Olivi	3	3	0	0	100%
10/12-12/30/92	Phoenix	Math	Diamond	3	2	0	1	100%
10/12-12/30/92	Phoenix	Math	Toliver	13	5	0	8	100%
10/12-12/30/92	Phoenix	Math	Toliver	13	5	1	7	83%
10/12-12/30/92	Phoenix	Math	Diamond	6	4	0	2	100%
10/13-11/19/92	Phoenix	Math	Scott	2	2	0	0	100%
10/13-11/19/92	Phoenix	Math	Scott	5	5	0	0	100%
2/22-5/22/93	Phoenix	Reading/Writing I	Gump	5	3	0	2	100%

CHART E: CLASSES BY COMPANY

2/23-5/23/93	Phoenix	Reading/Writing II	Gump	4	4	0	0	100%
2/23-5/23/93	Phoenix	Reading/Writing II	Gump	6	6	0	0	100%
3/2-5/8/93	Tricon	GED/Module I	Olivi	11	10	0	1	100%
5/15-6/26/93	Tricon	GED Module II	Olivi	9	8	0	1	100%
5/22-7/22/93	Tricon	Reading/Writing	Olivi	10	6	2	2	75%
5/24-7/28/93	Tricon	Reading/Writing	Olivi	7	5	1	1	83%
7/27-9/23/93	Tricon	Reading/Writing	Olivi	6	5	0	1	100%
8/2-10/4/93	Tricon	Math	Olivi	5	2	2	1	50%
9/28-11/16/93	Tricon	Math	Olivi	7	7	0	0	100%
11/18-11/30/93	Tricon	Math	Olivi	7	7	0	0	100%
1/14-3/25/94	Tricon	GED Module III	Olivi	3	2	0	1	100%
4/13-5/20/94	Tricon	GED Module IV	Olivi	2	2	0	0	100%
5/9-5/9/94	Tricon	Math	Olivi	8	8	0	0	100%
5/9-5/9/94	Tricon	Math	Olivi	9	9	0	0	100%
5/11-5/11/94	Tricon	Math	Olivi	6	6	0	0	100%
5/11-5/11/94	Tricon	Math	Olivi	10	10	0	0	100%
5/16-5/16/94	Tricon	Math	Olivi	7	7	0	0	100%
5/16-5/16/94	Tricon	Math	Olivi	10	10	0	0	100%
5/18-5/18/94	Tricon	Math	Olivi	7	7	0	0	100%
5/18-5/18/94	Tricon	Math	Olivi	10	10	0	0	100%
5/23-5/23/94	Tricon	Math	Olivi	6	6	0	0	100%
5/23-5/23/94	Tricon	Math	Olivi	10	10	0	0	100%
5/25-5/25/94	Tricon	Math	Olivi	6	4	2	0	67%
5/25-5/25/94	Tricon	Math	Olivi	10	6	4	0	60%
10/26-12/18/92	Videojet	Reading/Writing II	Lynch	12	11	1	0	92%
10/27-12/19/92	Videojet	Reading/Writing II	Oswald	11	11	0	0	100%
12/1/92-1/28/93	Videojet	Reading/Writing III	Jones	11	10	0	1	100%
1/11-3/30/93	Videojet	Reading/Writing III	Lynch	8	7	0	1	100%
1/12-3/11/93	Videojet	Reading/Writing III	Oswald	9	8	0	1	100%
9/21-11/18/93	Videojet	ESL	Putnam	7	7	0	0	100%
9/21-11/18/93	Videojet	Reading/Writing I	Oswald	11	11	0	0	100%

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Thomas G. Sticht
Consultant in Workforce Education & Lifelong Learning

2062 Valley View Blvd.
El Cajon, CA 92019-2059
telephone/fax (619) 444-9595

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Introduction

In 1992, the Workplace Education Division of THE CENTER / CCSD # 54 (THE CENTER) of Des Plaines, Illinois, as lead agency, in partnership with the Management Association of Illinois (MAI) were awarded a National Workplace Literacy Program (NWLP) grant from the U. S. Department of Education. The grant was awarded to provide workplace literacy programs to industries in the Chicago area that were undergoing organizational changes to introduce one or more Total Quality Management (TQM) procedures.

Total Quality Management procedures typically involve the introduction of new skill demands on line employees. Though not all plants introduce all aspects of TQM, the procedures introduced generally result in changes in the ways that employees must work. Frequently employees must change from working alone to working in teams, they must change from performing limited functions to performing a number of different steps and operations to produce a completed product, they must change from having quality determined by an inspector at the end of a production line to building-in quality themselves by conducting various measurements and charting the results in what is known as "statistical process control-SPC," and they must frequently engage in more communications with customers. Additionally, in some cases the introduction of new technology requires that employees engage in training programs that are brief, intense and place a premium on good reading, studying, problem solving, mathematics and communication skills.

Business Partners

In the Chicago area, THE CENTER /MAI team became partners with ten businesses that were implementing one or more aspects of TQM. Through a preliminary needs assessment, it was determined that these industries had a combined workforce in which some 30% -50% were lacking or weak in the basic English, literacy, or mathematics skills needed to work effectively in the new TQM environment. The businesses that were studied and a brief description follow: (Note: These descriptions reflect the businesses at the time of the preparation of the proposal to the U. S. Department of Education.)

> "**Amurol Product Company** manufactures specialty confectionery products. Of the 395 employees, there are 310 production workers on two shifts. In an effort to increase market share and due to the nature of business, new products are continually being introduced. Although the majority of sales are to domestic customers, new growth markets are being cultivated out of country."
>
> "**Burgess-Norton Mfg. Co.** is involved in the development and manufacture of piston pins, shafts, powdered metal parts, castings and keys, and sub-assemblies. These products are primarily produced for the automotive, truck and agricultural industries. A few of their major customers include John Deere, Ford, General Motors, Caterpillar, and Chrysler. The company has been in business in Illinois since 1903 and currently employs 512 people at two locations. The company has a goal of doubling sales volume by 1996. A basic skills problem stands in the way of achieving that business goal."

"**Commander Packaging** is a corrugated box manufacturer. The company has two plants in the Chicagoland area that employ 126 production employees who are members of the Graphic Communications Union. The company manufactures about a thousand custom orders each month. Their customers continue to demand more measurement and control of the manufacturing process. These demands result in more complex machinery, as well as a need for higher skill levels from all. The company is in the beginning stages of implementing Statistical Process Control in a plant-wide improvement process."

"**ITT McDonnell & Miller** manufactures boiler feeders, water cutoffs, steam vents and pressure regulators. The company has a workforce of 300 employees with 170 in production; the majority of whom are members of the International Brotherhood of Boilermakers. In an effort to increase productivity, ITT has developed "production centers" and "focused factories." The next phase will be formalized SPC training for all employees."

"**John Crane, Inc.** is a manufacturer of mechanical cells. Major customers include pump companies, the automotive industry, and other petroleum-related businesses. The company has a total workforce of 1,455 with approximately 841 involved in production. The company, in order to become more productive and increase its competitiveness, is employing the use of employee involvement and Statistical Process Control efforts, in order to increase employee effectiveness. In addition to the Total Quality Management, innovative work flow is being affected by the introduction of work cells."

"**Land O'Frost** manufactures shelf - stable food products and MRE (Meals Ready To Eat) for the military and was one of the primary food providers for Operation Desert Storm. The company has a total workforce of 275 which includes 225 production employees who are members of the United Food Commercial Workers."

"**Parco Foods, Inc.** is a leading baker of specialty cookies in the United States. The company supplies baked and frozen dough to a wide variety of wholesale and institutional distributors, as well as retailers of cookies such as MacDonald's. Approximately 211 members of the General Service Employees Union are employed on a full-time basis with up to 100 additional individuals employed seasonally."

"**Phoenix Closures, Inc.** develops, manufactures and markets closures, fitments and container sealing systems used in packaging a wide range of consumer, industrial and institutional products. Since 1982 the company has manufactured thermoplastic caps exclusively. The employment at Phoenix Closures has stabilized as their market matured so that nearly 300 individuals are employed today. Of that total, 208 are members of the Amalgamated Clothing & Textile Workers Union. In an effort to remain competitive, the company modernized processes and developed new products, as well as initiated a Total Quality Management program."

"**Tricon Industries, Inc.** is manufacturer of custom inserted molded components for the automotive industry and switches for the appliance industry. Since the company was started in 1944, it has expanded to 340 employees in four locations. Over the past two years Tricon has experienced significant growth in direct labor positions and support personnel."

"**Videojet Systems International** is a subsidiary of A. B. Dick Company. The company manufactures continuous stream ink jet processing printers and specialty inks. The production force totals about 270. The company has plans to implement SPC and an overall employee involvement initiative."

Meeting the Needs for Workplace Literacy

The preliminary analyses of the needs for basic skills training in the ten Chicago-area industries revealed that the primary needs were those for English language training, reading and writing literacy skills, and numeracy (computation, graphs) skills.

Establishing Workplace Literacy Programs

To establish basic skills programs, each industry training site established its own Employee/ Employer Basic Skills Committee. Each committee was comprised of a Human Resource Development/Personnel staff member, a plant manager, a floor supervisor, the union President or shop steward (if unionized), at least two production employees participating in the program, and a Site Coordinator.

The Committee made joint decisions on each aspect of the program design and implementation, including:

* a recruitment plan
* assessment policy and selection of assessment instruments
* review of overall assessment statistics
* approval of the course schedule and curriculum
* evaluating the achievement of program outcomes
* participation in the evaluation of the impact of the Basic Skills Program

Job Basic Skills Course Curriculum Development. To meet the specific basic skills needs of each of the ten industries, THE CENTER / MAI team produced customized training programs that were based on discussions with supervisors and employees regarding the specific types of job tasks that were producing some difficulties for workers because of basic skills problems. Additionally, an analysis was made of the types of tasks related to TQM that employees at each company had to perform that involved the use of English, reading and writing, and/or mathematics.

Observations of employees at work were accomplished to determine how basic skills were used on the job. Copies of job materials, including materials used in job training programs were obtained and were used to develop job-related curriculum materials. These materials included lists of the competencies that were to be developed, job-related basic skills tests that could be used as pre- and post-tests to determine if what was taught was learned by employees, and course materials used in instruction and for learning by employees. Appendix A presents samples of the job basic skills analysis, tests developed and assessment results for Tricon Industries to illustrate the curriculum development process.

Accomplishments

Number of Courses Conducted. Though THE CENTER / MAI programs were originally supposed to extend for only six quarters, an extension was obtained from the U. S. Department of Education that permitted two extra quarters in which courses could be presented.

Altogether, a total of 104 courses was offered in the project, which is about 112% of the total of 96 courses that was originally estimated to be needed. Most of the courses ran for 36-40 hours. They were offered on company time for the most part, though in some cases employee time before or after work, or during lunch was used for half the course. Classes were held in meeting rooms provided by the company. The number of courses offered by each company was (from highest to least number of courses): Tricon Industries (22 courses); John Crane (18 courses); Burgess-Norton-16; ITT McDonnell & Miller-13; Phoenix Closures-9; Amurol Products-8; Land O'Frost-8; Videojet-7; Parco Foods-2; Commander Packaging-1. Thirty-three of the courses were for English as a Second Language (ESL), 28

were for reading/writing, 35 were for mathematics, 6 were for preparation for the high school equivalency examination (the GED), and 2 were communications courses called "Customer Interaction."

Number and Costs of Employees Receiving Instruction. The data in this section is taken from the final quarterly report for the project. It shows that a total of 3,291 employees were assessed for basic skills across the ten industries and across all eight quarters of the project. This is 127% of the proposed goal of 2600 to be assessed. However, while the assessments exceeded the projected numbers, the courses actually enrolled only 948 employees, about 62% of the 1,525 that had been established as the goal for the project when originally proposed to the U. S. Department of Education.

Of the 948 employees who participated in courses, their average age was 41 years and 226 (45%) were males while 330 (55%) were females. In terms of race/ethnicity, 166 (28%) were White, 50 (8%) were Black, 295 (49%) were Hispanic and 85 (14%) were Asian/Pacific Islander.

The cost of the project in federal funds was $455,607. For the 948 employees, this comes to $480.60 per employee student. When the additional in-kind funds ($120,839) are added to the federal costs, the sum is $576,446 or $608.07 per employee. Finally, when the value of the release time that companies provided is added to the previous costs, the total is $814,541or $859.22 per employee.

A total of 21,289 instructional hours were provided at a cost of $21 per hour in federal funds, and $38 per hour when all funds are considered. On the average, since each worker received about 25 hours of instruction (21,289/948=22.46), the federal costs per employee were $561.50 and total costs were about $950 per worker, as indicated above.

Evaluating the Workplace Literacy Programs

Evaluation of THE CENTER / MAI workplace literacy programs was accomplished by both internal and external evaluation activities. In the internal activities, the Project Director at THE CENTER was responsible for obtaining and reporting all of the data presented above on numbers, types, and costs of courses. The Project Director was also responsible for supervising the quality of all aspects of the various program start-up, development, implementation and reporting activities. The Project Director, working with staff, was also responsible for obtaining all the pre- and post-test data and for administering and recording the interview questionnaires used to determine employer and employee perceptions of the workplace literacy courses.

The external evaluation activities consisted of site visits by the external evaluator to some of the locations and classrooms where instruction was carried out. This permitted the external evaluator to verify, on an unsystematic sampling basis, that quality instruction was being offered and that employers and employees were able to make judgments regarding the benefits of the instruction to them and the company.

In evaluating the workplace literacy programs, there were two main bodies of information that were developed. One dealt with how the program contributed to the organizational effectiveness (OE) of the business or industry involved in the program, and the other involved the effects of the program on employee development (ED).

The OE Perspective

From the perspective of the employing organization, workplace literacy programs are implemented to improve the organization's performance of one or more of its major human resources functions. These

functions include public relations, recruitment, training, employee behavior, productivity (job performance) monitoring and improvement, and advancement and promotion of effective employees.

In evaluating the workplace literacy programs, the external evaluator designed interviews that were administered to an unsystematic, convenience sample (obtained by the Project Director) of managers and supervisors to determine whether in their judgment, the workplace literacy programs had contributed to one or more of these organizational functions. A copy of the interview schedule is included at Appendix B.

Table 1 summarizes the Organizational Effectiveness interviews for seven companies for which a total of 21 interviews were conducted by THE CENTER staff. The remaining three companies were not sampled due to the time and expense involved in making numerous appointments and then re-scheduling when supervisors and/or employees could not make previously scheduled meetings. Repeated cancellations of scheduled meetings occurred because of business factors even when the external evaluator had traveled to the Chicago area with previous appointments made.

Public Relations and Recruitment Functions. The combined data indicate that, for the most part, the supervisors interviewed were unaware of whether or not the programs had helped the companies' public relations (e.g, through newspaper stories or company newsletters) or employee recruitment functions. Three supervisors at Amurol, John Crane and ITT M&M thought that the programs had improved their companies' ability to recruit new employees. The supervisor at John Crane thought this was so because the company offered workplace literacy programs now. Presumably, this would permit John Crane to recruit from a larger pool because it would not have to reject as large a number of less literate applicants.

Training Function. Two-thirds of the supervisors thought that the workplace literacy programs had improved their companies' ability to conduct training. Specific comments included:

Table 1. Responses of supervisors to interviews regarding the effects of the workplace literacy programs on organizational effectiveness in various human resources functions.

	Organizational Effects														
Company	Public Relations			Recruit Employees			Conduct Training			Employee Behavior					
	Yes	No	DK	Yes	No	DK	Yes	No	DK	Yes	No	DK			
Amurol		1	2	1		2	2		1	3					
Burgess-Norton		1	1		2		2			1	1				
John Crane		1	2	1	1	1	2	1		2	1				
ITT M & M		1	1	1		1	1	1		2					
Phoenix Closures			4		1	3	3	1		2	1	1			
Tricon			3			3	2		1	3					
Videojet			4			4	1		3	2	2				
Totals	0	4	17	3	4	14	13	3	5	15	5	1			

Organizational Effects

Company	Productivity Yes	No	DK	Promotions Yes	No	DK	Other Effects Yes	No	DK	Continue Program? Yes	No	DK
Amurol			3	1		2	1		2			3
Burgess-Norton			2		2		2			2		
John Crane	2		1	1		2	2		1	1		2
ITT M&M	1	1		2			2					2
Phoenix Closures	2	2		3	1		4			3		1
Tricon	2		1		2	1	3			1		2
Videojet	3		1		4		3		1			4
Total	10	3	8	7	9	5	17	0	4	7	0	14

Burgess-Norton: (1) "Math classes will help with SPC; English classes will help with team training; employees more confident." (2) "Should help with SPC training."

John Crane: (1) "They're capable of training their co-workers." (2) "Better communication."

ITT M&M: (1) "Basic skills will help them with training."

Phoenix Closures: (1) "Easier to train."(2) Some employees easier to train." (3) "Easier to train."

Tricon: (1) "Easier than before - pay more attention to details."

Videojet: (1) "Helped with other classes."

Employee Behavior. Seventy-one percent of supervisors thought that the workplace literacy programs had affected employee behaviors on the job. Specific comments included:

Amurol: (1) "People participating in program were more involved because they could communicate more ideas." (2) Employees have displayed some improved satisfaction that company has made an effort to provide help." (3) "Participants have exhibited an increase in self image which in turn has helped them in teamwork, helping in a positive manner in all work related duties."

Burgess-Norton: (1) "Speak more."

John Crane: (1) "---- has improved a bit. She's more confident now than before. ---- is about the same." (2) "Morale & teamwork is rising due to the increased confidence in communications."

ITT M&M: (1) "Improved attitude about the company-people seeing company doing something for them." (1) "A greater willingness to write out ideas, less afraid."

Phoenix Closures: (1) Teamwork improved."

Tricon: (1) "Increase morale, confidence to participate in teams." (2) "Morale." (3) "Morale higher."

Videojet: (1) "Some improvement." (2) "Understands better."

Productivity Function. In some cases the workplace literacy program may help improve an employee's job productivity through the reduction of errors, wastage, or other such efficiencies. In the present case, over one-third (36%) of the supervisors interviewed stated that they thought the workplace literacy programs had helped improve productivity in one way or another.

John Crane: (1) "Rising levels of effective communication is reducing the amount of scrap."

ITT M&M: (1) "More accuracy in reporting."

Phoenix Closures: (1) "Some, not all employees improved productivity." (2) "Less scrap."

Tricon: (1) "Reduce errors paperwork." (2) "Better on paperwork. Fewer errors paperwork. More conscientious."

Videojet: (1) "Understands and asks questions more now."

Promotion Function. At times, employee's basic skills levels may be too low for them or the company to consider them for promotion. In the present project, five supervisors in three companies thought that for some employees, their participation in the workplace literacy programs had increased their chances for promotion.

Amurol: (1) "This is too early to evaluate at this time. ---- was a back up line leader and more fully utilized as a line leader. The improved skills were of some assistance."

John Crane: (1) "In case there will be an opening, ----is qualified to be promoted."

ITT M&M: (1) "Trap line is more self-reliant, less dependent on salaried people." (1) " It hasn't happened yet because there isn't much movement, but he predicted people will be easier to train."

Phoenix Closures: (1) "Potential to promote."(2) "One may be ready to promote."(3) Some have promoted. Some will."

Other Effects. In almost four out of five cases (80%) the 21 supervisors who responded to the organizational effectiveness interview stated that there were other effects that the workplace literacy programs had had in addition to those previously discussed. Specific comments included:

Amurol: (1) "Safety-helped people to read important signs & machinery parts; Data Collection-helped people understand appropriate paperwork; Communication-with supervisors improved."

Burgess-Norton: (1) "One communicates more now with supervisors. Supervisors more confident employees understand instructions." (2) "Positive attitude-liked class or getting off work."

John Crane: (1) "I've noticed that most workers who participated improved their self confidence, speaking and working." (2) "Employee confidence-better command of speaking/writing; Employee participation increased-result of confidence; Empowerment & team building can be focused on.

ITT M&M: (1) "Positive attitude-people appreciate it & feel better about the company." (1) Classes have helped people understand information at work & indirectly ISO 9000."

Phoenix Closures: (1) "Spelling improvement; Involvement in meetings increased." (2) "Enthusiastic about learning." (3) "More willing talk at meetings." (4) "More aggressive about jobs-try improve their skills."

Tricon: (1) "In promotable status-some participants will be more likely to promote than before."(2) "Self-esteem improved." (3) "Better understanding-speak better (ESL students), Math better for SPC."

Videojet: (1) "Eager - talk to others - 1 especially." (2) "Took shyness away." (3) "Not afraid to communicate now; Takes more initiative-starts on own."

Will the Company Continue the Program? This question was included to get yet another indication of the extent to which companies valued the workplace literacy programs. It is not likely that companies would want to continue programs that they did not feel were valuable.

In the present case, seven (33%) supervisors at four companies stated that they thought the company wanted to continue the programs. Specific comments included:

Burgess-Norton: (1) "Planning to continue beyond grant. Prefer 1/2 on company time, 1/2 on employee time because of impact on production schedule." (2) "Committed to continuing on own. Took longer for employees to reach goals than he anticipated. Apprehension about the classes has subsided."

John Crane: (1) " We are looking into a state grant."

Phoenix Closures: (1) "Would like to see training continue. Will be more training (union will be conducting training)." (2) & (3) "Will continue (union will be conducting training). Think good idea to continue.

Tricon: (1) "Math training-positive & negative numbers."

Summary of the OE Responses. Summing across the "Yes," "No," and "Don't Know" columns of Table 1 gives 72 "Yes," 28 "No," and 68 "DK" responses. If attention is restricted to only the "Yes" and "No" responses, there were a total of 100 responses, of which 72% were "Yes," indicating that the program has had a positive effect on one or more organizational human resources functions.

While the interviews were open-ended and permitted supervisors much leeway in responding, the fact that so many "Don't Know" responses were recorded suggests that supervisors were not responding to the interview with a simple bias toward positive responses. Rather, they seemed to be reluctant to comment when they felt that they did not know enough to comment.

That so many of the supervisor's responses commented on the new found confidence and self-image of employees is a perception that they shared with the employees themselves, as was indicated in the employee development interviews summarized later on.

The ED Perspective

While the OE perspective places the needs of the organization at the forefront of program evaluation, the employee development (ED) perspective looks at how the program is serving the interests of the employee in both the workplace and in other settings. Becoming involved in a job- based education

program can motivate employees to seek more responsibility at work, it can affect their attitudes toward schooling and learning, and this can affect their behaviors toward their children, spouses and others. It can motivate employees to continue their education outside of the workplace. All these changes can, in turn, increase the "marketability" of the person and influence supervisors and managers to a greater appreciation of the person as an employee, and this may be reflected in increased pay and promotions or a job change. These types of employee developments serve to indicate that the workplace literacy program has produced a degree of "portability" of literacy skills in the employee.

Learning Outcomes

The first type of information that is useful in determining ED effects is information about how well the employees learned in the various courses. Information regarding learning outcomes were obtained by the internal evaluation staff. This information included data on the percentages of enrollments, drop outs, and success rates of those who completed the various courses. Additional information was obtained using job-related English, reading/writing or math tests that were administered as both pre- and post-tests to measure the extent to which employees learned what was taught in the courses (see the example in Appendix A). Pre- and post-test data from courses in six companies were provided to the external evaluator for analysis and reporting.

Course Completion and Success Rates. Of the 948 employees who participated in the 104 workplace courses, 33% were enrolled in ESL programs, 34% in Math, 26% in Reading/Writing, 5% in GED preparation, and 2% in Customer Interaction programs. There was an 11% drop out rate across all programs. For the 89% who remained in the programs, there was a 95% success rate in which employees met the standards for mastering the competencies taught in the courses. The standards for the competency-based courses was that at the end of the course, 90% of employees will demonstrate the competencies taught in the course.

Demographics of Employees With Test Score Data. To determine if employees had learned what was taught in the job-related reading and mathematics courses, tests were constructed using job materials and asking for task performance similar to that needed for reading or computing on the job. Only one form of each test was constructed. It was used for both pre- and post-testing. It was expected that because there were several weeks and some 36 or so hours of instruction between the pre- and post-tests that the gains exhibited would reflect learning due to instruction and not just practice in taking the test once before taking it again. The procedure of constructing alternate forms of tests for pre- and post-testing that were psychometrically equivalent was too technical for the internal evaluator staff and would have been too costly for the project's budget if tests had been developed by either internal staff or external consultants. It would also have demanded considerable participation by employers and employees beyond that which was devoted to instruction, and such additional time and personnel commitments from the industries involved were not feasible.

In the case of the mathematics tests, they were decontextualized problems in computational operations (add, subtract, multiply, divide) from the Tests of Adult Basic Skills (TABE). Because the tests were excerpts and not complete tests, use of the norming data for the TABE was not appropriate.

Table 2 shows data from eleven courses conducted at six companies. Demographic data for each company is summarized in the following.

Burgess-Norton: Data for one reading and one mathematics course were available from Burgess-Norton. There were 9 employees in the reading course, all of whom were ESL students. Eight were male and all were Hispanic. Ages ranged from 29 years to 57 years, with a mean of some 40 years. Four

had 6 years of education, one 10 years and 3 had completed 12 years of education. They had been employed from 1 to 17 years, with 1 year being the median.

For the 35 members of the mathematics course, 28 (80%) were males, and 9 were ESL. Thirteen (37%) were White, 13 (37%) were Black, and 9 (25.7%) Hispanic. Their ages ranged from 25 to 60 years, with an average age of 40 years. Ten were 45 years old or older. Their years of education ranged from 8 to 12, with over 18 having 12 years of education. They had been employed anywhere from 1 to over 21 years, with 26 (74%) having been employed 10 or fewer years. Only two had been employed for less than one year. The median years of employment was 6.

John Crane: Data from one reading and one mathematics course were available from John Crane. Of the 16 employees in the reading course, 9 were male and all were ESL language users. There were no Whites or Blacks in the program. Regarding ethnicity, there were 6 (37.5%) Hispanics, 4 (25%) Asian, and 6 (37.5%) Other. Their ages ranged from 30 to 64, with an average of 46 years. Nine were 45 years old or older. Their years of education ranged from 5 to 13, with 6 having 12-13 years of education. The median years of education was 9.5. They had been employed from 6 to 20 years, with a median of 12.5 years of employment.

Of the 14 employees in the mathematics program, 13 were female, and 13 were ESL speakers. There were no Whites, there was 1 (7%) Black, 2 (14.2%) Hispanics, 1 (7%) Asian, and the remaining 10 (71%) were Other. Their ages ranged from 25 to 67 years, with an average of 42 years. Their years of education ranged from 4 to 8 years, with a median of 4.5. They had been employed from 4 to 23 years, with the median years of employment being 6.

ITT McDonnell & Miller: There were 21 employees in the reading program for which data were available. Fifteen of the employees were males, and 19 were native English speakers. There were 10 (47.6%) Whites, 7 (33.3%) Blacks, and 4 (19%) Hispanics in the class. Ages ranged from 34 to 63, and the median was 48 years of age. Nine were over 50 years of age. Their years of education ranged from 3 to 17, with 11 having 12 or more years of education. The median was 12 years of education. They had been employed from 1 to 27 years, with a median of 13 years of employment.

Phoenix Closures: Data were available for one reading and one mathematics course at Phoenix Closures. In the reading course, there were 13 employees, of whom 7 were females, and 10 were ESL speakers. Four (30.7%) were non-Hispanic Whites, and the remaining 9 (69.2%) were Hispanic. Ages ranged from 24 to 45 years , with a mean age of 37 years. Years of education ranged from 6 to 12, with a median of 9 years. Years of employment ranged from just over a half year, to 13 years, with a median of 6 years.

In the mathematics course, there were 38 employees who participated. Six of these had also taken the reading course. Of the 38 employees in the course, 13 were males and 25 females. Sixteen were native English speakers and 22 were ESL speakers. Eighteen (47%) were non-Hispanic Whites, 19 (50%) were Hispanics, and 1 was Asian. Age data were available only for the six employees who had taken the reading course, and ages ranged from 28 to 44 with 4 being over 40 years of age. Years of education ranged from 4 to 12, with a median of 9. Years of employment ranged from 2 to 11, with a median of 5 years.

Tricon: Data were available for three courses at Tricon, two reading and one mathematics course. One reading course was for employees in general, and the second was only for employees in the production division of Tricon. Demographic data were available only in the course for general employees. In this course, 17 of the 19 employees were female and were ESL speakers. Ages ranged from 26 to 52, with a median of 35 years of age. Two (10%) were White, 3 (15.7%) were Black, 8 (42%) were Hispanic, and

5 (26%) were Asian. Years of education ranged from 6 to 16, with a median of 11. Median years of employment was 1.5, with a range from 0.2 to 14 years.

In the mathematics class there were 11 employees, 9 or whom were female. Four were ESL speakers. Seven (63.6%) were White, 2(18%) were Black, and 3 (27.7%) were Asian. Years of education ranged from 8 to 12, with 8 having 12 years of education. The median age was 47, with the range going from 34 to 54 years. Years of employment ranged from 0.8 to 14, with the median being 3 years.

Videojet: The 15 employees in the reading program with data from Videojet were 7 males and 8 females, all of whom were native language speakers. Six (40%) were Black, 6 (40%) were Hispanic, and 2 (13.3%) were Asian. Years of education ranged from 8 to 16 years, with a median of 12, and years of employment ranged from 2 to 16, with a median of 6.

Pre- and Post-Test Scores. It is clear from the mean scores of Table 2 that in all cases, employees did considerably better on the post-tests than they did on the pre-tests, suggesting that all courses resulted in learning by the participants. Indeed, out of the total of 209 pre- and post-test scores across all courses and companies, 207 showed positive gains and only two showed post-test scores lower than pre-test scores, and both of those were in the mathematics tests which were multiple-choice and permitted guessing. A complete listing of test scores by company and course is given in Appendix C.

Table 2. Means and standard deviations (SD) of pre- and post-test scores on job-related reading and math tests in eleven courses at six companies. All entries are raw scores correct except for John Crane-Reading which are percent correct. All pre-post gain differences are statistically significant using t-tests for paired means.

Company	N	Reading					N	Math		
		Pre X	SD	Post X	SD		Pre X	SD	Post X	SD
Burgess-Norton	9	18.7	19.7	32.0	12.3	35	21.7	28.3	28.3	11.3
Max. Possible:		47				44				
John Crane	16	44.3	22.2	70.8	18.9	13	26.3	04.8	34.3	06.7
Max. Possible:		100%					48			
ITT	21	29.2	10.7	40.9	06.1	-	-	-	-	-
Max. Possible:		56								
Phoenix	13	45.7	16.5	99.5	08.4	38	28.9	06.6	38.4	05.6
Max. Possible:		125					48			
Tricon	19	35.3	09.3	58.9	10.4	11	18.0	07.5	27.9	05.8
Max. Possible:		74					34			
	19	11.1	04.6	18.1	02.9	-	-	-	-	-
Max. Possible:		21								
Videojet	15	38.5	05.4	52.3	03.1	-	-	-	-	-
Max. Possible:		62								

Employee Interview Responses. The test score data indicated that employees did, in fact, learn job-related knowledge in the courses they attended. However, some literacy educators have speculated that workplace literacy programs that focus on job-related knowledge may result in learning that has little or no transfer, "portability," or generalizability to situations outside the workplace.

To get some idea about how employees felt about the value of the workplace literacy programs for work, home and community, the structured interviews asked for detailed information as indicated in Tables 4, 5, 6, 7 and 8.

Table 3 presents a summary of the responses from the 22 employees interviewed in four companies. Clearly, the workplace literacy programs were not viewed as entirely restricted to helping the employees at work. Summed over the four companies, more than half thought that the programs not only helped them at work, but also at home. Some 40% thought the programs had helped them in their communities.

Table 3. Employee responses to interviews about how the workplace literacy programs had helped them.

Has This Workplace Literacy Program Helped You At:

Company	N	Work			Home			Community			More Education		
		Yes	No	DK	Yes	No	DK	Yes	No	Dk	Yes	No	DK
		%	%	%	%	%	%	%	%	%	%	%	%
Burgess-Norton	5	76	16	8	64	18	18	33	67	0	80	0	20
John Crane	8	65	27	8	33	67	0	69	31	0	50	37	13
ITT M&M	5	91	7	2	64	36	0	95	5	0	100	0	0
Tricon	4	76	21	3	58	42	0	25	75	0	75	25	0
Videojet	5	62	19	19	58	42	0	55	35	10	40	60	0

Note: This table shows the percentage of Yes, No, or Don't Know responses to questions about the effects of participating in workplace literacy programs on work, home, community, or desire for additional education. For instance, considering John Crane, there were 8 employees who answered 10 questions about the effects of the program on work. Thus there might have been 80 responses. However, because one of the questions was about a math program, and none of the employees at John Crane took a math program, the math question was not applicable to these eight students. Therefore the potential of 80 responses was reduced by 8 to 72. Then, because a second question on teamwork was not applicable to these 8 employees, because they all worked alone, the potential of 72 responses was reduced by 8 to 64. The table shows the percentage of the 64 remaining responses that were Yes, No, or DK responses. For John Crane, 65% of the 64 responses were Yes, 27% were No, and 8% were DK. Similar procedures were followed in constructing the remaining data in the table.

Contributions to National Education Goals. National education goal number 6 (in the Goals 2000 Act) calls for adults to engage in lifelong learning. Importantly, over half of the employees stated that their participation in the workplace literacy program had stimulated an interest in participating in additional education, suggesting that the programs have contributed to the achievement of goal number 6.

National education goal number 1 states that all children will enter school ready to learn, and it places quite a bit of responsibility upon parents or grandparents for preparing their children for school by reading to them during the pre-school years. Examination of Tables 4, 5, 6 and 7 reveals 12 of the 22 respondents had no children or grandchildren to read to. But of the remain 10 employees, 40% said that due to the workplace literacy program they now read more to their children. This suggests that the workplace literacy programs may also contribute to the achievement of Goal 1.

Table 4. Employee Development Effects

Burgess-Norton

Has this ESL/Read &Write or Math program helped you at work:	Yes	No	DK	Example/Comment
1. Read job materials better?	3			
2. Write job materials better?	3			Some words; Sometimes-more words
3. Listen & speak on the job better?	3			Understand more now. Understands verb tenses. Speaks more; understands better now.
4. Do math for job tasks better?	2			Refresh memory; Better understanding now.
5. Work better in teams?				(n/a - all work by themselves)
6. Reduce waste; scrap; errors; etc. ?	3	2		(1) Less errors in paperwork.
7. Know more about company policies, etc.?	2	1		(2) Understands better now.
8. Feel confident about trying for promotion?		1	2	(1) Maybe later.
9. Learn better in company training programs?				(n/a- none have taken other training)
10. Improve your morale with company?		3		
Has program helped you at home?				
11. Have you started reading more at home?	3			Uses dictionary to read paper in English. Does homework for community college course. Reads little more now.
12. Do you write more/better at home?	1	2		Before couldn't write anything.
13. Do you use math better at home?	2			(1) More comfortable now.
14. Do you help your children/ grandchildren with homework more?	1			Has daughter in 4th grade-help each other. (4 n/a)
15. Do you read to (grand)children more?			2	(1 n/a)
Has this program helped you in your community?				
16. Do you feel more confident about reading in stores, offices, etc.?		3		No problems with this type of reading.
17. Do you feel more confident writing in government forms, etc.?		3		Usually have forms in Spanish too. No problems in this area.
18. Has this program made it easier for you to speak in public?	3			More confident; tries more. Depends on conversation. More comfortable now.
19. Has this program made you feel more confident about reading and understanding the issues for voting in the next election?	1	2		Not citizen; thinking about becoming a citizen. Not too much - use different words.
20. Has the program lead you to consider taking more education or training programs?	4		1	Studies with videos at home-Spanish/English. Taking community college class-ESL Maybe weekends. Baby sits during week. Time problems.

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Table 5. Employee Development Effects

John Crane

	Yes	No	DK	Example/Comment
Has this ESL/Read & Write program helped you at work:				
1. Read job materials better?	7	1		Read job forms better
2. Write job materials better?	3	4	1	Short sentences
3. Listen & speak on the job better?	8			Not ashamed now. Speak better.
4. Do math for job tasks better?				(n/a)
5. Work better in teams?	7	1		Easier to understand others.
6. Reduce waste; scrap; errors; etc. ?	1	5	2	A little.
7. Know more about company policies, etc.?	8			(8) Understands safety better now.
8. Feel confident about trying for promotion?		6	2	Need more English. Too old. Need to read better.
9. Learn better in company training programs?				(n/a- none have taken other training)
10. Improve your morale with company?	8			Can talk to boss better. Very Happy.
Has program helped you at home?				
11. Have you started reading more at home?	4	4		Read paper at lunch time. (2) Read paper.
12. Do you write more/better at home?	1	7		Notes to daughter.
13. Do you use math better at home?				(n/a)
14. Do you help your children/ grandchildren with homework more?	1	3		(4 n/a) Help more with math than with English.
15. Do you read to (grand)children more?	2	2		(4 n/a)Reads to child. Reads when babysitting.
Has this program helped you in your community?				
16. Do you feel more confident about reading in stores, offices, etc.?	8			Read signs better.
17. Do you feel more confident writing in government forms, etc.?	5	3		(2) Driver's license. Fill forms out better.
18. Has this program made it easier for you to speak in public?	6	2		
19. Has this program made you feel more confident about reading and understanding the issues for voting in the next election?	3	5		Not citizen.
20. Has the program lead you to consider taking more education or training programs?	4	3	1	Like to try. If didn't have child. Computer classes.

Table 6. Employee Development Effects

ITT McDonnell & Miller	Yes	No	DK	Example/Comment
Has this ESL/Read & Write/GED program helped you at work:				
1. Read job materials better?	5			Understand gauges & work orders better. Easier to read words & expresses self better.
2. Write job materials better?	5			Can fill out work order & tickets better. Helped fill out papers better w/fewer errors.
3. Listen & speak on the job better?	4			(1 n/a) Tremendous difference. Less shy; voice better. Can use more words. More ability to explain how work should done. Understand English better.
4. Do math for job tasks better? (n/a)				
5. Work better in teams?	5			Listens to others more. Hear their opinion. More considerate now of others. More able to understand other people & express his thoughts. Can explain better. Communicates better with different people.
6. Reduce waste; scrap; errors; etc. ?	4	1		Wastes less time now when writing. More thorough now & has a better work ethic. Helped him become neater. Can read instructions better which helps reduce scrap.
7. Know more about company policies, etc.	5			(5) Read & understand rules/policies better now.
8. Feel confident about trying for promotion?	5			Became a group leader! Confident he knows his job well & can do any job. Made him more confident of reading ability "to handle different situations." Feels he is able to achieve in a harder job.
9. Learn better in company training programs?	4	1		He slows down and reads more carefully. Reads directions better. Can listen better & pay better attention. Gets along better w/people from different cultures. Works better w/people; better communication.
10. Improve your morale with company?	3	2		Feels better at work. Felt good that company offered him a program. Felt encouraged to write.
Has program helped you at home?				
11. Have you started reading more at home?	3	2		Helps wife with schoolwork. Newspapers & Bible.
12. Do you write more/better at home?	4	1		Better penmanship & spelling. Writes down fishing conditions for future reference. Starting to write checks & pay bills more. Writes notes from Bible to show his father. Writes about what other countries are producing on their farms.
13. Do you use math better at home? (n/a)				
14. Do you help your children/ grandchildren with homework more?	1	1		(3 n/a) Helps daughter with reading.
15. Do you read to (grand)children more?	1	1		(3 n/a)
Has this program helped you in your community?				
16. Do you feel more confident about reading in stores, offices, etc.?	5			Read labels easier. Understand medical forms better.

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17. Do you feel more confident writing in government forms, etc.?	5		Able to explain himself better. Filled out a car registration last night. (2) Fill out forms better.
18. Has this program made it easier for you to speak in public?	4	1	More comfortable/confident. Thinks before speaks. Less shy.
19. Has this program made you feel more confident about reading and understanding the issues for voting in the next election?	4		(1 n/a - not citizen). Read/listen to news better.
20. Has the program lead you to consider more education programs?	5		More job-related schooling. Taking courses for taking stationary engineers license. Pursue writing. or training Automotives or computing. Improve English with private tutor. Community college GED possibly.

Table 7. Employee Development Effects

Tricon

Has this ESL/Read & Write program helped you at work:	Yes	No	DK	Example/Comment
1. Read job materials better?	4			Terminology clearer. (2) Read forms better.
2. Write job materials better?	3			Lots better.
3. Listen & speak on the job better?	2	1	1	More sure of what said. Very improved.
4. Do math for job tasks better?				(n/a)
5. Work better in teams?	4			(3) Communicate better with others.
6. Reduce waste, scrap, errors, etc. ?	3	1		(3) Less mistakes with paperwork.
7. Know more about company policies, etc.?	4			(4) Understand policies better now.
8. Feel confident about trying for promotion?	1	3		Would like to apply for better job.
9. Learn better in company training programs?	1			Took SPC class. Understood paperwork better. (3 n/a- have taken no other training)
10. Improve your morale with company?	3	1		(2) Feel better about self.
Has program helped you at home?				
11. Have you started reading more at home?	1	3		Reads bills better.
12. Do you write more/better at home?	2	2		Try write more. Writes notes to teacher.
13. Do you use math better at home?				(n/a)
14. Do you help your children/ grandchildren with homework more?	2			(2 n/a) Daughter helps her too.
15. Do you read to (grand)children more?	2			(2 n/a) Reads to her little boy. Easy to read children's books.
Has this program helped you in your community?				
16. Do you feel more confident about reading in stores, offices, etc.?	2	2		(2) Goes self now, before needed interpreter/help.
17. Do you feel more confident writing in government forms, etc.?		4		
18. Has this program made it easier for you to speak in public?	2	2		Lot more comfortable now. More confident.
19. Has this program made you feel more confident about reading and understanding the issues for voting in the next election?		4		
20. Has the program lead you to consider taking more education training programs?	3	1		Might take classes at community college for better /different job. Maybe to learn more English.

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Table 8. Employee Development Effects

Videojet **Has this ESL/Read & Write program helped you at work:**	Yes	No	DK	Example/Comment
1. Read job materials better?	4	1		
2. Write job materials better?	3	2		Understands paperwork more. Fills forms more.
3. Listen & speak on the job better?	5			Understand better.
4. Do math for job tasks better?				(n/a)
5. Work better in teams?	4		1	(2) Understand more now. Little better now.
6. Reduce waste; scrap; errors; etc. ?	1	2	2	Less mistakes with paperwork.
7. Know more about company policies, etc.?	4	1		(2) Understand rules/policies better now.
8. Feel confident about trying for promotion?	2		2	
9. Learn better in company training programs?		2		Two took other classes but ESL class didn't help. (3 n/a- have taken no other training)
10. Improve your morale with company?	2		3	A little. More comfortable speaking now.
Has program helped you at home?				
11. Have you started reading more at home?	3	2		(2) Newspapers. (1) magazines. Understands more.
12. Do you write more/better at home?	2	3		Write notes to kids, husband. Writes short notes.
13. Do you use math better at home?				(n/a)
14. Do you help your children/ grandchildren with homework more?	2			(3 n/a) Helps 8 year old. Help each other.
15. Do you read to (grand)children more?				(5 n/a- no little children/grandchildren)
Has this program helped you in your community?				
16. Do you feel more confident about reading in stores, offices, etc.?	4	1		Don't always understand, but asks questions.
17. Do you feel more confident writing in government forms, etc.?	1	4		
18. Has this program made it easier for you to speak in public?	4	1		More comfortable. Ask questions.
19. Has this program made you feel more confident about reading and understanding the issues for voting in the next election?	2	1	2	Likes to read about politics.
20. Has the program lead you to consider taking more education or training programs?	2	3		Like to take more classes at school. Has taken more classes outside work.

Conclusions and Recommendations

Over the last year the external evaluator observed workplace literacy classrooms in action at several of the manufacturing companies described earlier in this report. He also conducted extensive discussions with the Project Director and teaching staff, and with supervisors and employees at several of the companies.

Conclusions: Based on the foregoing activities and the data presented above, certain conclusions regarding the workplace literacy project under review seem appropriate:

(1). THE CENTER / CCSD #54, Management Association of Illinois (MAI) and the ten manufacturing companies involved in the project formed successful partnerships to bring workplace literacy programs to 948 employees in the Chicago area. Although 108 courses were provided (108% of goal), the project served 948 workers which constituted 62% of the total originally anticipated in the proposal to the U. S. Department of Education.

(2). The Project Director and staff indicated that they have developed interpersonal skills and operational procedures that permit them to repeatedly enter into a business, set-up an education coordination team, conduct a basic skills needs analysis and assessment with managers, union members and employees, develop job-related assessment instruments and administer them, develop and deliver job-related English language, reading/writing, and mathematics programs on company sites at times convenient to the employers and employees.

(3). Supervisor judgments, job-related test score data, and employee judgments all converge to suggest that the workplace literacy programs (a) produced improvements in job-related basic skills; (b) in many cases improved productivity through the reduction of wastage and errors; (c) improved morale and employee confidence on the job, at home, and in the community and (d) contributed not only to the organizational effectiveness of the companies involved but also to the achievement of national education goals 1 and 6 in the Goals 2000 Act.

Recommendations: The recommendations have to do with actions to increase the amount of usable data in future projects.

(1). The external evaluator should be involved earlier in the project. This could result in the development of assessment instruments earlier and in their earlier use to obtain a larger corpus of information that is more representative of the total number of courses offered and employees served.

(2). THE CENTER has now conducted work with over forty different companies in the Chicago area. It should now be possible to draw upon the body of job-related materials and tasks from previous projects to develop alternative forms of job-related assessments that sample across various specific jobs, are normed on regional workers and which could be used as pre-and post-tests in each new program to determine the extent to which the workplace literacy training results in more generalizable work-related basic skills. This could be done with consultation from psychometricians in the Chicago area.

(3). Consideration should be given to the use of a brief, 20 minutes or so, assessment instrument that provides an indication of how well employees perform relative to a national sample. Something like the TABE locator test, or a quick test of vocabulary that provides national percentiles would be useful to indicate the degree of literacy development is needed to achieve high levels and how much is actually achieved in these brief workplace literacy programs.

(4). Future projects should consider the various organizational functions identified in the Organizational Effectiveness interview and how the project can increase the numbers of "yes" judgments. For instance, most of the supervisors interviewed were unaware of any Public Relations benefits of the workplace literacy courses. Perhaps an informational brochure and a briefing could be developed that could educate managers and supervisors about the various OE functions and suggest how they could get public relations, recruitment, etc. benefits from participating in the project.

(5). Future projects should consider the various categories of benefits on the Employment Development interview and develop ways to increase benefits. For instance, a simple pamphlet or a video in English, Spanish and other high frequency languages might be developed to explain the national education goals and how the employees can use their workplace literacy experience to contribute to the various goals.

Appendix A

Sample materials from job-related reading task test development activities.

[Note: Only one page of the job-related reading task test is presented. The actual test is much longer]

READING/WRITING ASSESSMENT

Background

In mid-February, 1993 The CENTER administered a customized reading/writing assessment to employees across all three shifts at , and in early April several additional assessments were completed. The total number of employees assessed with this instrument was 312. All employees completed a common portion of the assessment. Additionally, employees in the areas of production, shipping/receiving, and brazing completed a job-specific supplement.

Results

A frequency distribution of the scores from the assessment, including any supplement, is shown below.

Assessment Scores	No. of Employees
95-100%	121
90-94	84
85-89	35
80-84	21
75-79	11
70-74	8
65-69	6
60-64	4
55-59	5
50-54	7
45-49	2
40-44	4
0-39	4
Total	312

Average 88%

Range 16-100%

Assessment - All Employees

Directions: Complete the Scrap Ticket below using the following information.

You are an operator in Department 22 on second shift. Use today's date and your own operator number.

The production is going to Department 11. It is production number 85782-300 for United

Your daily scrap is 24 pieces of part number 204-00188, revision D, caused by underfills, slug marks, and flash. Your daily scrap also includes 14 of component number 002-00699E and 12 of component number 002-00700E.

NON-CONFORMING MATERIAL IDENTIFICATION AND MOVE TICKET

INITIATED BY
OPERATOR: _____ DATE: _____
SHIFT: _____ DEPT.: _____

FROM DEPT. (AREA) | TO DEPT. (AREA)

OF PCS. (OR WEIGHT)

IN PROCESS ROUTING
- ☐ TO SCRAP CAGE
- ☐ FOR REWORK
- ☐ FOR SORT
- ☐ HOLD FOR REVIEW
- ☐ RETURN TO VENDOR
- ☐ OTHER (SPECIFY)

SOURCE OF SCRAP
- ☐ SET-UP/START-UP
- ☐ OPERATOR DAILY SCRAP
- ☐ REJECTS FROM SORT
- ☐ LOT REJECTION BY QC.
- ☐ OTHER (SPECIFY)

PRODUCTION # : _____
CUSTOMER : _____
TRICON PART # : _____
REVISION LEVEL : _____

FINAL DISPOSITION
- ☐ SCRAP
- ☐ RETURN TO VENDOR
- ☐ REWORK
- ☐ SORT

INSTRUCTIONS: _____

- ☐ ACCEPT NOTED NON-CONFORMITY
- ☐ OTHER: _____

Q.A. SIGNATURE: _____
DATE: _____

SPECIFICALLY WHAT IS NON-CONFORMING ON PRODUCT

ENTER BY QUALITY COST ACCOUNTING
- ☐ YES BY: _____
- ☐ NO DATE: _____

LIST COMPONENT SCRAP PART NUMBERS:

Form #123 Rev. 3/91

Appendix B

Copies of the Organizational Effectiveness and Employee Development interview forms used in the workplace literacy program evaluation.

Organizational Effectiveness Interview

Date: Interviewer:

Name of Organization:

Name of Program:

Name and Position of Participant:

Extent of Knowledge of Program:

Has this program helped your organization in

1. Public Relations (newpaper articles, TV or radio coverage, etc.)? Yes_____ No_____ Don't Know_____ If yes, provide some specific examples.

2. Ability to Recruit Employees? Yes_____ No_____ Don't Know____ Provide specifics.

3. Ability to Conduct Training? Yes_____ No_____ Don't Know_____ Provide specifics.

4. Employee Behavior? (attendance; morale; teamwork; etc.) Yes_____ No_____ Don't Know_____ Provide Specifics.

5. Employee Productivity? (reduced wastage; better quality; etc.) Yes_____ No_____ Don't Know_____ Provide Specifics (give numbers where possible).

6. Employee Promotions? (upward mobility of derving employees). Yes_____ No_____ Don,t Know_____ Provide Specifics (names; positions; how many; etc.

7. Other Organizational Effects? (List and describe).

8. Will your organization continue this program after federal funds are gone? Yes_____ No_____ Don't Know_____ Discuss pros and cons.

Employee Development Interview

Date: Interviewer:

Organization:

Program:

Has this program helped you at work:

1. Read job materials better? Yes_____ No_____ Don't Know_____
   If yes, give an example.

2. Write job materials better? Yes_____ No_____ Don't Know_____
   If yes, give an example.

3. Do math for job tasks better?Yes_____ No_____ Don't Know_____
   If yes, give an example.

4. Listen & speak on the job better? Yes_____ No_____
   Don't Know_____ If yes, give an example.

5. Work better in teams?Yes_____ No_____ Don't Know_____
   If yes, give an example.

6. Reduce wastage; scrape; errors; etc. ?Yes_____ No_____
   Don't Know_____ If yes, give an example.

7. Know more about company policies, how the company works, personnel policies, safety procedures, etc. ?Yes_____ No_____ Don't Know_____ If yes, give an example.

8. Feel confident about trying for a promotion or new position?Yes_____ No_____ Don't Know_____ If yes, give an example.

9. Learn better in company training programs? Yes_____ No_____ Don't Know_____ If yes, give an example.

10. Improve your morale, happiness with company, etc.? Yes_____ No_____ Don't Know_____ If yes, give an example.

Has this program helped you at home?

11. Have you started reading more at home? Yes_____ No_____ Don't Know_____ If yes, give an example.

12. Do you use math better at home?Yes_____ No_____ Don't Know_____ If yes, give an example.

13. Do you write more/better at home?Yes_____ No_____ Don't Know_____ If yes, give an example.

14. Do you help your children/grandchildren with homework more? Yes_____ No_____ Don't Know_____ If yes, give an example.

15. Do you read to children/grandchildren more? Yes_____ No_____ Don't Know_____ If yes, give an example.

Has this program helped you in your community?

16. Do you feel more confident about reading in grocery stores, government offices, department stores, etc.?Yes_____ No_____ Don't Know_____ If yes, give an example.

17. Do you feel more confident about writing in government forms, automobile registrations, etc. ?Yes_____ No_____ Don't Know_____ If yes, give an example.

18. Has the program lead you to consider taking more education or training programs?Yes_____ No_____ Don't Know_____ If yes, give an example.

19. Has this program made it easier for you to speak in public? Yes_____ No_____ Don't Know_____ If yes, give an example.

20. Has this program made you feel more confident about reading and understanding the issues for voting in the next election? Yes_____ No_____ Don't Know_____ If yes, give an example.

Appendix C

Reading and Mathematics test score data and statistical analyses for six manufacturing companies that participated in the workplace literacy project.

Pre-Read	Post-Read
0	10
44	44
14	31
41	35
0	13
3	35
44	40
0	37
23	43
Maximum	
Possible 47	N=9

Pre-Read		*Post-Read*	
Mean	18.7777778	Mean	32
Median	14	Median	35
Mode	0	Mode	35
Standard Dev	19.7280117	Standard Dev	12.3389627
Sum	169	Sum	288
Count	9	Count	9

t-Test: Paired Two-Sample for Means

	Pre-Read	*Post-Read*
Mean	18.7777778	32
Variance	389.194444	152.25
Observations	9	9
Pearson Corr	0.64239974	
Pooled Varian	156.375	
df	8	
t	-2.6229976	

Pre-Math	Post-Math
30	38
33	35
41	44
35	43
38	43
36	38
37	44
34	38
41	43
41	43
27	34
22	15
10	14
24	29
14	25
14	17
42	43
11	36
20	28
17	27
8	24
16	30
23	30
30	35
5	8
12	21
10	17
28	33
7	23
6	16
5	7
9	13
12	16
13	19
10	22
Maximum	
Possible 44	N=35

Pre-Math		*Post-Math*	
Mean	21.7428571	Mean	28.3142857
Median	20	Median	29
Mode	41	Mode	43
Standard Dev	12.4104862	Standard Dev	11.3027103
Sum	761	Sum	991
Count	35	Count	35

t-Test: Paired Two-Sample for Means

	Pre-Math	*Post-Math*
Mean	21.7428571	28.3142857
Variance	154.020168	127.751261
Observations	35	35
Pearson Corr	0.89402451	
Pooled Varian	125.406723	
df	34	
t	-6.9872693	

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Pre-Read (%)	Post-Read(%)
40	78
42	77
34	73
80	92
69	96
15	25
0	41
14	54
42	51
35	74
41	74
55	79
44	70
65	79
64	84
70	86
Maximum	
Possible:100%	N=16

	Pre-Read		*Post-Read*
Mean	44.375	Mean	70.8125
Median	42	Median	75.5
Mode	42	Mode	74
Standard Dev	22.2826539	Standard Dev	18.9744346
Sum	710	Sum	1133
Count	16	Count	16

t-Test: Paired Two-Sample for Means

	Pre-Read	*Post-Read*
Mean	44.375	70.8125
Variance	496.516667	360.029167
Observations	16	16
Pearson Corr	0.85085388	
df	15	
t	-9.0327721	

Pre-Math	Post-Math
26	37
21	37
23	28
23	36
21	19
24	36
27	35
27	33
28	41
28	43
24	28
33	30
38	43
Maximum	
Possible:48	N=13

	Pre-Math		*Post-Math*
Mean	26.3846154	Mean	34.3076923
Median	26	Median	36
Mode	21	Mode	37
Standard Dev	4.80517883	Standard Dev	6.77476464
Sum	343	Sum	446
Count	13	Count	13

t-Test: Paired Two-Sample for Means

	Pre-Math	*Post-Math*
Mean	26.3846154	34.3076923
Variance	23.0897436	45.8974359
Observations	13	13
Pearson Corr	0.4875535	
Pooled Varian	15.8717949	
df	12	
t	-4.6810123	

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Pre-Read	Post-Read
13	40
31	39
36	42
36	48
43	45
22	36
26	41
20	47
36	50
34	36
41	47
37	43
41	44
45	48
8	36
36	39
30	45
26	37
18	34
13	24
22	38
Maximum Possible:56	N=21

Pre-Read		*Post-Read*	
Mean	29.2380952	Mean	40.9047619
Median	31	Median	41
Mode	36	Mode	36
Standard Dev	10.7233612	Standard Dev	6.09839948
Sum	614	Sum	859
Count	21	Count	21

t-Test: Paired Two-Sample for Means

	Pre-Read	*Post-Read*
Mean	29.2380952	40.9047619
Variance	114.990476	37.1904762
Observations	21	21
Pearson Corr	0.65484497	
Pooled Varian	42.8238095	
df	20	
t	-6.5544582	

Pre-Read	Post-Read
33	108
60	113
53	100
25	105
55	110
35	89
53	91
41	100
31	89
76	105
51	100
19	88
63	96
Maximum	
Possible:125	N=13

Pre-Read		*Post-Read*	
Mean	45.7692308	Mean	99.5384615
Median	51	Median	100
Mode	53	Mode	100
Standard Dev	16.5788713	Standard Dev	8.48150325
Sum	595	Sum	1294
Count	13	Count	13

t-Test: Paired Two-Sample for Means

	Pre-Read	*Post-Read*
Mean	45.7692308	99.5384615
Variance	274.858974	71.9358974
Observations	13	13
Pearson Corr	0.4092863	
Pooled Varian	57.5512821	
df	12	
t	-12.736488	

Pre-Math	Post-Math
37	44
31	42
32	41
32	40
33	42
31	39
31	43
33	42
31	42
31	43
32	40
25	37
34	39
30	41
28	38
26	35
21	34
21	30
27	39
28	36
29	37
4	18
18	29
22	35
22	30
19	27
25	36
26	38
28	39
35	42
34	42
35	45
36	43
36	44
35	45
34	41
33	40
36	43
Maximum	
Possible 48	N=38

Pre-Math		*Post-Math*	
Mean	28.9736842	Mean	38.4473684
Median	31	Median	40
Mode	31	Mode	42
Standard Dev	6.61483526	Standard Dev	5.63625987
Sum	1101	Sum	1461
Count	38	Count	38

t-Test: Paired Two-Sample for Means

	Pre-Math	*Post-Math*
Mean	28.9736842	38.4473684
Variance	43.7560455	31.7674253
Observations	38	38
Pearson Corr	0.9514153	
Pooled Varian	35.4715505	
df	37	
t	-27.287291	

Pre-Read	Post-Read
31	62
32	62
33	46
23	53
33	58
44	68
10	29
40	84
43	63
40	69
33	61
44	68
27	56
27	43
46	69
38	63
45	60
47	71
35	55

Maximum Possible:74 N=19

Pre-Read		Post-Read	
Mean	35.31578947	Mean	58.94736842
Median	35	Median	62
Mode	33	Mode	62
Standard Dev	9.375219296	Standard Dev	10.46939287
Sum	671	Sum	1120
Count	19	Count	19

t-Test: Paired Two-Sample for Means

	Pre-Read	Post-Read
Mean	35.31578947	58.94736842
Variance	87.89473684	109.6081871
Observations	19	19
Pearson Corr	0.881646869	
df	18	
t	-19.3437871	

Pre-Read Sup	Post-Read Sup
12	14
18	21
2	16
11	18
6	16
11	21
5	11
10	20
7	16
14	20
7	19
18	21
12	20
5	14
16	21
14	21
14	18
14	20
15	17

Maximum Possible:21 N=19

Pre-Read Sup		Post-Read Sup	
Mean	11.10526316	Mean	18.10526316
Median	12	Median	19
Mode	14	Mode	21
Standard Dev	4.841536346	Standard Dev	2.941933167
Sum	211	Sum	344
Count	19	Count	19

t-Test: Paired Two-Sample for Means

	Pre-Read Sup	Post-Read Sup
Mean	11.10526316	18.10526316
Variance	21.54385965	8.65497076
Observations	19	19
Pearson Corr	0.882649299	
df	18	
t	-8.97592935	

Pre-Math	Post-Math
1	15
15	34
11	20
15	26
22	28
23	33
16	28
20	29
23	29
29	33
23	32

Maximum Possible 34 N=11

Pre-Math		Post-Math	Post-Math
Mean	18	Mean	27.90909091
Median	20	Median	29
Mode	23	Mode	28
Standard Dev	7.589466384	Standard Dev	5.838742081
Sum	198	Sum	307
Count	11	Count	11

t-Test: Paired Two-Sample for Means

	Pre-Math	Post-Math
Mean	18	27.90909091
Variance	57.6	34.09090909
Observations	11	11
Pearson Corr	0.839483968	
Pooled Varian	37.2	
df	10	
t	-7.90353247	

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Pre-Read	Post-Read
45	55
41	45
35	53
37	54
27	55
43	50
47	54
37	54
35	47
33	53
34	52
43	50
37	56
40	53
44	53
Maximum	
Possible: 62	N=15

	Pre-Read		*Post-Read*
Mean	38.5333333	Mean	52.2666667
Median	37	Median	53
Mode	37	Mode	53
Standard Dev	5.39664799	Standard Dev	3.05816627
Sum	578	Sum	784
Count	15	Count	15

t-Test: Paired Two-Sample for Means

	Pre-Read	*Post-Read*
Mean	38.5333333	52.2666667
Variance	29.1238095	9.35238095
Observations	15	15
Pearson Corr	-0.1304169	
df	14	
t	-8.1319812	